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Rev. R. MAIN, President, in the Chair.

The Rev. Percival Alfred Fothergill, B.A., H.M.S. Melpomene, was balloted for and duly elected a Fellow of the Society.

Evening Illumination of Fracastorius (*Lunar Crater*).

By W. R. Birt, Esq.

I obtained a fine view last evening, at $11^h\ 10^m$ G.M.T., of the crater *Fracastorius* described by Webb as an *imperfect* ring forming a bay of the *Mare Nectaris*, and marked on his index-map (372). There are several similar objects on the lunar surface demanding close attention, from the probability of portions of their walls having been destroyed since the formation of the craters. The termination last evening just grazed the *outer* portion of the ring on the western side, and the angle of illumination was such as to show very distinctly every inequality of the floor and its surrounding *enclosure.* The ring was seen to be *complete.* The following is the entry I made at the time of observation :—" The north-eastern edge of the crater (northern ?) is perceptible *as a series of low points or peaks, casting very short shadows.*"

These low peaks, seen under such an illumination as I had last evening, completely separate the crater from the mare, and, combined with the difference of level, the floor of the crater appearing as if slightly depressed below the level of the mare, would indicate that whatever force might have *broken* down the portion of the wall *towards* the mare (if such has been the case), the floor in this instance *has not been altered* so as to produce the appearance of a filled or partially filled crater, giving rise to that of a bay. Several instances of partially

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filled craters may be found on the moon. The shadows of the eastern peaks were long, sharp, and well defined, one being interrupted by the brilliant point of a projecting crag. The unevenness of the floor was well seen. Epoch 1860, Jan. $12^{d}\cdot47$ G.M.T. Moon's age, $19^{d}\cdot73$. Libration, N.W.—$3^{d}\cdot76$. Epoch Jan. $16^{d}\ 5^{h}\ 34^{m}$. Perigee $+2^{d}\cdot84$. Epoch Jan. $9^{d}\ 15^{h}\ 0^{m}$.

Letter from the Rev. Father Secchi to the Astronomer Royal, received 1860, *January* 11.

"I take this opportunity to inform you that I have been progressing in my researches on the polarisation of light reflected by the moon. The principal result deserving attention is the almost perfect equality of polarisation which takes place in all the smooth parts of the moon, and that under any inclination of the plane touching the reflecting surface. The strongest indeed is in the *Mare Serenitatis*, but the difference compared with the other *maria* is quite insignificant; on the contrary, the tops of the mountains are not polarised at all in the neighbourhood of the Caucasus, Riphœi, and Apennini. In the neighbourhood of Tycho, where there is a great alternation of flat and mountainous region, the light is more polarised than at the above-mentioned mountains, and less than in the *maria*. The means of measuring the quantity of polarisation is by a pile of glass-plates as a polarometer in combination with a very sensible polariscope of *Arago*. The error in the angle is seldom one degree; but as I have not yet graduated my pile, I can only tell you the more or less, and I will give you afterwards the absolute numbers of the quantity of polarised light. This seems to me a very remarkable thing, as I have said in the *Comptes Rendus*, that we find equally polarised light on the whole smooth surface of the moon, whatever be the inclination of the incident and reflected rays. The only thing which practically gives the same result is the glass paper used in the arts. Can this kind of surface have influence in the *corona* seen during eclipses? this is not improbable. I have made this experiment:—Through a telescope I have looked at the image of the sun made in the focus of an object-glass, and have imitated the eclipse, putting in the way of the luminous rays two objects: 1st, a smooth cylinder; 2d, a cylinder covered with glass (or emery) paper, and I have seen great difference in the outline of the termination of the edges; the latter seemed to have a bright fringe and some scattered rays starting from the edges. If the moon is so constituted, no wonder if a similar effect be produced and the *corona* so generated. But as I have never seen the *corona*, I cannot say whether the appearance observed by me was equal to it or not. The experiment might be repeated by those who have seen it and can judge better.